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HARRY HOLBROOK BARROWS

Harry Holbrook Barrows died of a heart attack on May 2 at his apartment in Washington, D. C. Burial was at Arlington National Cemetery, May 6, with military honors. He is survived by a brother and three sisters.

Mr. Barrows joined the Department of Agriculture in July, 1910, as assistant office engineer in drainage investigations, Office of Experiment Stations. He held positions of drainage engineer and senior drainage engineer in the Bureau of Public Roads, and became assistant chief of the Bureau of Agricultural Engineering when this was formed last July.

Mr. Barrows was born at Kent, Ohio, February 5, 1874. He was educated in the public schools at Cleveland, and attended Iowa State College and Ohio State University, graduating from the latter in 1898 with the degree of civil engineer. For about 12 years he engaged in railroad engineering, advancing from rodman to division engineer. On September 2, 1917, he was commissioned captain of engineers in the United States Army. He served in France from June, 1918 to June, 1919, in charge of operating French railways used by American troops. He returned to his former position in the Department of Agriculture July 16, 1919.

As assistant chief of the Bureau of Agricultural Engineering and previously, Mr. Barrows participated in the administrative work, in planning the research projects, and in preparing reports of investigations. To many publications of the bureau he has contributed, by his critical reviews and editing, as much or more than the credited authors. The high standard of our publications has been due in large part to his efforts. He had the esteem and confidence of his superiors and of his associates, by reason of his professional judgment, his tact, and his executive ability, as well as for his sympathetic helpfulness in matters either official or personal. The loss of his counsel and his companionship are keenly felt.

: During the coming fiscal year the Bureau will have :
: to operate with less funds than have been available during :
: the present year. It will be necessary for all of us to :
: economize in every way possible. No saving should be con- :
: sidered too small. I wish particularly to call your atten- :
: tion to the matter of economy in the use of stationery, :
: forms of all kinds, and minor supplies. It will be :
: especially necessary to economize on paper as very severe :
: restrictions have been laid upon the amount that can be used :
: in Government service during the next fiscal year and these :
: limits can not be exceeded. The demand for supplies of :
: this kind is large and I hope it can be reduced without :
: impairing the progress of our work. :

L. A. Jones will leave Washington June 1 for Houma, La., Temple and Tyler, Tex. and Fayetteville, Ark. At Fayetteville he will talk before the Southwestern Soil and Moisture Conservation Congress on "Soil erosion and its control." Then he will go to Guthrie, Okla., and in company with C. E. Ramser he will visit the soil erosion experiment farms there and at Hays, Kans., Clarinda, Ia., and Bethany, Mo. From Bethany he will go to Columbus, O., to attend the annual meeting of the A.S.A.E.

F. E. Staebner is installing 12,000 feet of drain tile near Belle Glade, Fla., to control the depth of ground water at different elevations in experiments to determine the effect of various depths of ground water on crop growth in peat soils.

J. G. Sutton will report at the Washington office on May 31, as assistant to the chief of the Division of Drainage and Erosion Control.

S. P. Lyle will visit points in Missouri early in June, on agricultural engineering extension work and will attend the conference of agricultural extension workers at Columbus, Ohio, on June 16 to 18. At the latter conference, papers on "Terracing Recommendations" and on "The President's Conference on Home Building and Home Ownership" will be presented by L. A. Jones and Wallace Ashby, respectively.

George R. Boyd is in the Washington office working on various research projects.

Chas. A. Bennett conferred with ginning machinery manufacturers at Birmingham and Montgomery, Ala., Atlanta and Columbus, Georgia; and Charlotte, N.C. He is now in the Washington office for conference

with the Chief of Bureau. Before returning to Mississippi he will inspect a new type of extractor for cleaning seed-cotton at Homer City, Pa. Mr. Bennett reports that considerable rearrangement is being made in the experimental gins.

At the annual meeting of the A.S.A.E. to be held at Columbus, Ohio., June 20 to 23, papers by members of this Bureau will be presented, as follows:

- "Artificial Drying of Agricultural Products," by R.B. Gray.
- "Cooperative Plan Service," by S. P. Lyle.
- "Dairy Manger Standards," by M.A.R. Kelley.
- "Progress of Irrigation in Eastern United States,"
by F. E. Staebner.
- "Refinancing of Drainage Districts," by Geo. R. Boyd.
- "Recent Developments in Land Reclamation," by L. A. Jones.
- "Ditch Cleaning and Ditch Machinery," by W. D. Ellison.
- "Purpose of the Joint Extension Committee," by S.P. Lyle.

C. E. Ramser left Guthrie on May 16 to inspect the erosion experiment project of the Forestry Experiment Station at Ogden, Utah; visit the Soil Erosion Experiment Farm at Pullman, Wash., address the meeting of the Pacific Section of A.S.A.E. at Pullman and visit the Irrigation Office of the Bureau at Berkeley, Calif. He also visited the Forestry Experiment Station near Berkeley to obtain information on erosion experiments. He will return to Guthrie about June 4.

G. E. Ryerson has completed the construction of about $3\frac{1}{2}$ miles of terraces on the La Crosse, Wis. soil erosion project. Several of these terraces were constructed on land slopes of 30 per cent. Rock encountered on the 30 per cent slope added greatly to the difficulty of building a satisfactory terrace. The Caterpillar terracer turned over several times when encountering rock. No success was had in attempting to terrace this steep slope with a Martin Ideal Terracer.

R. W. Baird has finished the installation of two large silt boxes on unterraced areas on the Tyler project. One of these boxes is installed on a badly gullied area where the gullies are controlled by brush check dams; the other is on an area devoted to a strip cropping experiment. Run-off and soil losses from these areas will be compared with similar losses from terraced areas.

A. T. Holman reports the completion of a silt box 8 by 64 feet, the largest silt box on any of the farms. It is installed on an unterraced area of about 6 acres. Several large brush dams of the I. D. Wood type have been built, one of which, about 35 feet long and 5 feet high at the center, cost about \$20. Hodge posts were purchased for use in its construction and the brush was available on the farm.

An 8 by 40-foot silt box 2 feet deep on the Guthrie farm, which was filled with soil during one rain from a cultivated watershed area of about four acres, has been lengthened to 60 feet. H. S. Riesbol reports that a pressure recorder has been substituted for a float type recorder, since the float well became filled with silt during heavy rains and interfered with the proper action of the float.

From his experience in building terraces on the steep lands of the Pullman soil erosion project, P. C. McGrew reports that in constructing terraces on steep slopes of 20 per cent or more all the soil should be moved from the upper side. The average costs of building terraces on this project were \$32 per mile and \$4.55 per acre.

W. W. McLaughlin returned to the Berkeley office from Washington, D.C., where he had spent the past two months. En route he conferred with the State Board of Water Engineers at Austin, Texas, and with the Directors of the New Mexico and Arizona Agricultural Experiment Stations concerning plans for future cooperative work.

Fred C. Scobey made additional tests on the carrying capacity of the Tiger Creek conduit of the Pacific Gas and Electric Co., in the mountains about 175 miles from San Francisco. This flume is approximately 20 miles long, 14 feet wide, and 7 feet deep, and is of reinforced concrete of excellent wall surface but rough on the bottom. Tests made on this conduit last August by Mr. Scobey showed that the algae growth in three months service had increased the value of n in Kutter's formula to .0152 at the upper end, diminishing with distance to 0.0122 near the lower end. At the time of the April, 1932 tests, the flume was absolutely clean of algae. The tests with three flows in daily succession, taken near the middle of the flume, showed values of n approximating 0.012 in exactly the same reach where a value of 0.013 was found last August, with moderate algae slimes.

L. T. Jessup left Yakima April 17 for Bonners Ferry, Idaho, to continue the study on the Kootenai River project begun two years ago. Lyman G. Youngs has been appointed to assist Mr. Jessup and is now engaged in soil sampling work in that area.

J. C. Marr reports that tests of the use of calcium chloride for eradicating water cress in drains indicate that such treatment is ineffective. Inspection recently made of treated water cress seemed to indicate conclusively that it can not be eradicated by this means.

M. R. Lewis, upon request of the Oregon Agricultural Experiment Station, is outlining plans for the preparation of a uniform set of maps of all the branch experiment stations of the State. Since Mr. Lewis has supervised the establishment of the station at Medford and has planned the irrigation system for the new station at Hermiston, he agreed to prepare the maps for these two stations.

Arch Work reports that preparation of the experimental tract at Medford is nearing completion. M. R. Lewis spent a week at Medford during April, laying out the irrigation system for the tract.

Buildings and water supply system are practically completed and we are now occupying the office and laboratory building. In the early part of April, considerable orchard smudging was resorted to in order to prevent frost injury to the budding trees, when the temperature dropped to about 30° F. During one week 3,800 gallons of oil was burned for this purpose, it being necessary to keep the heaters lighted for seven hours one night and six hours another, whereas ordinarily not more than about half that time is required. In the coldest portion of the night, the temperature in the orchard was about 5 degrees warmer than outside, with less than half of the pots lit.

Carl Rohwer left headquarters at Fort Collins, Colo. April 2, for a trip through California, Oregon, Idaho, and Utah, to study pumping for irrigation. Numerous pump installations were visited, and conferences held with manufacturers of pumping equipment, with well drillers, and with representatives of water companies, municipalities, flood control districts, etc., interested in the subject of pumping.

O.V.P. Stout is conducting tank experiments to determine use of water by various weeds common to the delta region of the Sacramento-San Joaquin Valley of California. These include nettles, smartweed, cockle burr, and prickly lettuce. Weed tank plots have been fenced and planted to pop corn to reduce the exposure of the tank plants. Preparation has been made for installation of equipment for evaporation stations. Mr. Stout is also conducting tank experiments on duty of water for asparagus, which is one of the main crops of this region.

R. L. Parshall is working on alterations and improvements of certain sandtrap installations in Colorado. In one of the creeks only about 8 second-feet was available for temporary observations, and it was necessary to open the headgate sufficiently to permit all the sand and trash to enter the ditch. One morning it was found that the sand trap had trapped one auto tire, a dish pan, and part of an old icebox. It is planned to put in a temporary grating upstream to retain the heavy trash and protect the sandtrap. It has been estimated that by means of the riffle deflector sandtrap, 60 tons of sand was removed per day from this canal with a discharge of 6 or 7 second-feet.

R. B. Gray visited Toledo April 23 on matters relating to the corn borer control project. On April 25 he and two other members of the A.S.A.E. Fuels and Lubricants Committee started from Canton, Ohio, on a two week's trip, calling on some 12 agricultural engine and tractor manufacturers. He reports a majority of the manufacturers as sympathetic toward the use of engines with higher compressions and burning gasoline, for promoting fuel economy. A number of manufacturerers have experimented or are planning to experiment with higher compression heads. The Ethyl Corporation and General Motors laboratories in Detroit were visited.

R. M. Merrill conferred with officials of the Peoria Drill and Seeder Division of Farm Tools, Inc., at Peoria, Ill., April 26, regarding a limestone spreader which has been adapted for scattering poison bran bait for grasshopper control. This machine has been tested at Toledo with very good results. At Urbana, Ill. Mr. Merrill conferred with Messrs. Cleaver and Young and Prof. Lehmann regarding the corn borer control studies there.

A. H. Graves, of the Toledo station, assisted Messrs. Cleaver and Young at Urbana on May 5 and 6, in testing new coverage attachments for plows.

R. M. Merrill was in the eastern corn borer area the first week of May, conferring with Frank Irons and V. D. Young, and with officials of other bureaus and State institutions at South Norwalk, Conn. at the Berkeley farm, Mass., at New Brunswick and Trenton, N.J., and at State College, Pa.

Officials of Farm Tools, Inc., Mansfield, Ohio, visited Toledo and viewed tests of the Peoria limestone spreader for scattering poison bran grasshopper bait.

G. A. Cumings and W. H. Redit spent a week at Toledo, making some changes and adjustments on the potato planter used in the fertilizer placement studies and testing the machine.

E. D. Gordon reports that the second cutting of alfalfa, 21 tons, was run through the experimental apron conveyor dryer at Jeanerette, La. This was dried whole, and baled as it was discharged, with one man feeding the material on the apron and one man operating the Threader hay press. The alfalfa was partly wilted, the entering hay showing about 60 to 65 per cent moisture content. Observations were taken on two lots of hay, one whole and the other chopped into $1\frac{1}{2}$ to 2-inch lengths, as to the rate of evaporation of moisture when unheated air was circulated over them. The whole hay, with initial moisture content of 75.5 per cent, was reduced to 64.7 per cent moisture content in two hours. The chopped hay, with initial moisture content of 60.83 per cent was reduced to 37.08 per cent moisture content in one hour. However, the relative humidities of the ingoing air were 82 per cent and 51 per cent, respectively, for the two lots of hay.

John W. Randolph has developed a variable depth cotton planter to place some cotton seed at suitable depth for germination and growth, whatever weather conditions may follow. The principle of the planter is to have the seed furrow opener oscillate so that the seed will be dropped at variable depths in the row, in a smooth, vertical curve. Early observations indicate that variable depth planting is advantageous.

E. M. Mervine and S. W. McBirney are planting sugar beets in experimental plots with the combination planter and fertilizer distributor developed by G. A. Cumings. This machine measures out the fertilizer accurately and places it in any predetermined one of five positions with respect to the seed and is performing

very satisfactorily . The first plantings were made in California in March, the next in Colorado in April and May, and later plantings in western Nebraska and eastern North Dakota. The work is in cooperation with the Bureau of Plant Industry and is expected to continue for three years. The machine is being moved from one region to another by truck.

C. K. Shedd reports that a new drawbar recording and integrating dynamometer has been designed and built in connection with corn production machinery investigations, in cooperation with the Department of Agricultural Engineering, Iowa State College. The dynamometer has a stop watch built in so as to automatically indicate the time for a record run, which is automatically measured as 55 feet of travel. The energy consumption can be read directly from the integrator. By the use of a calibration chart, the integrator reading can be readily converted to drawbar pull or to foot pounds of energy or to horse power. A special tractor drawbar has been built so that the dynamometer can be inserted without making any change in the hitch of the implement to the tractor. This apparatus will greatly facilitate the testing of energy consumption of various farm implements.

E. M. Dieffenbach reports that finishing touches are now being applied to a storage room and shop for the joint use of our Bureau and the Bureau of Entomology at Albany, Georgia. This building will satisfy the need of a place for housing supplies and equipment during spraying and dusting investigations. The building is 22 by 40 feet, contains an insecticide room for the use of the Bureau of Entomology, space for their truck sprayer; a small shop for our use, and space for the sprayer or apparatus being investigated.

D. A. Isler left Presidio April 29 for Phoenix, Ariz. to observe the results of plowing experiments and to study methods of removing volunteer cotton plants from abandoned fields in the pink bollworm infested areas of the Salt River Valley.

For the past month G. A. Cumings, A. L. Sharp, and W. H. Redit have been planting cotton in North Carolina, South Carolina, Georgia, Mississippi, Arkansas, Louisiana, Texas and Oklahoma, and potatoes in Virginia, New Jersey, Ohio, Michigan, and Maine, in connection with the fertilizer placement studies.

W. V. Hukill made two tests during the past month, with strawberries in transit from Lawtey, Florida, securing data on temperature and air movement in refrigerator cars. Mr. Hukill also prepared an article on the "Effect of Color on Temperature in Sunshine" for the Sixth International Congress on Refrigeration to be held at Buenos Aires.

A.H. Senner has completed manuscript for a bulletin on "Heating the Farm House".

G. M. Warren has completed revision of Farmers' Bulletin 1426, "Farm Plumbing". The revision is brought up to date as regards prices and most recent standard practice in farm plumbing and includes additional material on hot water supply.

Arrangements are being made to erect an addition to the fertilizer machinery building at Arlington Farm, Va. T.A.H. Miller, W. V. Hukill and Wallace Ashby are cooperating with R. B. Gray on this project.

J. T. Bowen has prepared a paper on late developments in refrigeration for dairying for the Sixth International Congress of Refrigeration, and a report on the status of research work of the dairy engineering committee of the A.S.A.E.

T. A. H. Miller recently gave an illustrated talk before the Washington Section, A.S.M.E., at the Cosmos Club, in Washington, on "Use of Earth in Building Construction."